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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/091,035

03/06/2002

William Vann Hasty JR.

43240

6469

7590

05/27/2004

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EXAMINER

PHAN, MAN U

ART UNIT

PAPER NUMBER

2665

9

DATE MAILED: 05/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/091,035

Applicant(s)

HASTY ET AL.

Examiner

Man Phan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-17, 19-28 and 30-51 is/are rejected.
- 7) ☒ Claim(s) 7, 18 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to applicant's 03/29/2004 Amendment in the application of Hasty, Jr. et al. for a "System and method for using per-packet receive signal strength indication and transmit power levels to compute path loss for a link for use in layer II routing in a wireless communication network" filed 03/06/2002. The proposed amendment to the claims and response have been entered and made of record. Claims 1-6, 8, 9, 17, 23-26, 28 & 31 have been amended, and claims 34-51 have been added. Claims 1-51 are pending in the present application.

2. In view of applicant's amendment to amend claims 1-6, 8-9 and 23-26, 31 to obviate the objection, examiner has withdrawn the Objections of record.

The rejection of record with respect to claims 6, 17 and 28 under 35 U.S.C. § 112, second paragraph are hereby removed based on applicant's amendment.

Remarks

3. Applicant's response and argument with regard to the rejection under 35 USC 103 have been considered but are moot in view of the new ground(s) of rejection, and will be examined as discussed below. Furthermore, the rejections of record under 35 U.S.C. ' 103 of the claims are withdrawn in view of the newly additional reference to Toh (US#5,987,011). Accordingly, This action is made Non-Final. Rejections based on the newly cited references follows:

Claim Rejections - 35 USC ' 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 1038 and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-6, 11-17 and 22-28, 33-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toh (US#5,987,011) in view of Haartsen (US#5,491,837).

With respect to claims 1-6, 11 and 34-39, both Toh (US#5,987,011) and Haartsen (US#5,491,837) disclose a novel system for determining the link quality in wireless communication utilizing RSSI and TPL of the data packet, according to the essential features of the claims. Toh (US#5,987,011) discloses a routing method for supporting ad-hoc mobile

communications within a radio communications network. The network comprises a plurality of mobile hosts including a source mobile host and a destination mobile host, and a plurality of radio communications links connecting together with mobile hosts. The method comprises measuring the stability of the communications links between neighbouring mobile hosts using an associativity based characteristic and selecting a communications route through the network from the source mobile host to the destination mobile host based on the stability of the communications links. The associativity characteristic is measured by each mobile host periodically transmitting and receiving identifier beacons (ticks) and updating the status of its corresponding links. The greater the number of ticks associated with a given link, the greater its stability. Use of the associativity characteristic enables the routing method to deal efficiently with mobile host migrations throughout the network (Col. 3, lines 25 plus and Col. 21, lines 18 plus).

However, Toh does not disclose expressly the received sensitivity and received signal strength indication values received at the data packet, and provided by the network. In the same field of endeavor, Haartsen (US#5,491,837) discloses a method for dynamically allocating channels in a communication system which maximizes system capacity and link quality while minimizing the transmitted power of the mobile radiotelephones. Haartsen teaches in Figs. 5 & 6 flow charts illustrated the uplink and downlink allocation of channels within a radio communication system, specifically a cellular network which comprising the steps of: (a) measuring, in a mobile station, received signal strength indications (RSSIs) of control signals broadcast from at least one base station; (b) determining a path loss between the mobile station and the at least one base station using the RSSI measurements; 8 measuring, in the at least one

base station, an RSSI of interference signals on a plurality of available traffic channels; (d) determining transmit powers required for the mobile station to produce a signal on each of the plurality of available traffic channels at the at least one base station, wherein a strength of the signal is a predetermined level above a corresponding RSSI interference level measured on a traffic channel taking into consideration the path loss; and (e) assigning one of the plurality of available traffic channels as an uplink channel based on the determined transmit powers (TPL) (Col. 7, lines 5 plus and Col. 19, lines 28 plus).

Regarding claims 12-17, 22 and 40-45, they are method claims corresponding to the apparatus claims 1-6, 11 and 34-39 above. Therefore, claims 12-17, 22 and 40-45 are analyzed and rejected as previously discussed with respect to claims 1-6, 11 & 34-39.

With respect to claims 23-28, 33 & 46-51, these claims differ from claims Toh in view of Haartsen in that the claims recited a computer program product for performing the same basis of steps and apparatus of the prior arts as discussed in the rejection of claims 1-6, 11, 34-39 and 12-17, 22, 40-45 above. It would have been obvious to a person of ordinary skill in the art to implement a computer program product in Toh in view of Haartsen for performing the steps and apparatus as recited in the claims with the motivation being to provide the efficient enhancement to the link quality determination in a wireless communication network, and easy to maintenance, upgrade.

One skilled in the art would have recognized the need for effectively and efficiently determining the integrity of a link for use in layer II routing, and would have applied Haartsen's assigning uplink and downlink radio channels utilizing RSSI and TPL into Toh's novel routing method where communications between source and destination mobile hosts is carried out across

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a conference size packet radio network of mobile hosts. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Haartsen's method and system for channel allocation using power control and mobile assisted handover measurements into Toh's routing method for ad-hoc mobile networks with the motivation being to provide a method and system for using per-packet RSSI and TPL to compute path loss for a link for use in layer II routing in a wireless communication network.

9. Claims 8-10, 19-21 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toh (US#5,987,011) in view of Haartsen (US#5,491,837) as applied to claims above, and further in view of Okanou (US#6,307,843).

With respect to claims 8-10, Toh and Haartsen disclose the claimed limitations discussed in paragraph 8 above. In the same field of endeavor, Okanou (US#6,307,843) provides an ad-hoc network of mobile hosts interconnectable by a number of wireless links, each mobile host includes a link table having a multiple entries each comprising a host name, a link identifier indicating one of the wireless links, a network layer address and a data link layer address. Each of the mobile hosts comprises a link table having a plurality of entries each comprising a host name, a link identifier indicating one of the wireless links, a network layer address and a data link layer address. Each mobile host is responsive to an entered destination host name for making a search through the link table, transmitting a frame containing the network layer and data link layer addresses of an entry of the link table on one of the wireless links which is indicated by the link identifier of this entry if this entry contains the destination host name. If the link table does not contain the destination host name, the mobile host scans the wireless links, broadcasts a link

table request message on one of the scanned wireless links, receives a remote link table containing the destination host name, and transmits a frame containing network layer and data link layer addresses of the received link table on the wireless link on which the remote link table was received (See Figs 1, 2; Col. 1, lines 44 plus).

One skilled in the art would have recognized the need for effectively and efficiently determining the integrity of a link for use in layer II routing, and would have applied Okanoué's ad hoc network in which mobile hosts are connected to each other via direct wireless links, and Haartsen's assigning uplink and downlink radio channels utilizing RSSI and TPL into Toh's novel routing method where communications between source and destination mobile hosts is carried out across a conference size packet radio network of mobile hosts. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Okanoué's ad hoc network of mobile hosts using link table for identifying wireless links and destination addresses, Haartsen's method and system for channel allocation using power control and mobile assisted handover measurements into Toh's routing method for ad-hoc mobile networks with the motivation being to provide a method and system for using per-packet RSSI and TPL to compute path loss for a link for use in layer II routing in a wireless communication network.

Allowable Subject Matter

10. Claims 7, 18 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is an examiner's statement of reasons for the indication of allowable subject matter: The closest prior art of record fails to disclose or suggest the specific equation for calculating the link quality ratio as expressly recited in claims 7, 18 and 29.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Krishnamurthy et al. (US#6,735,448) is cited to show the power management for throughput enhancement in wireless ad-hoc networks.

The Perkins (US#5,412,654) is cited to show the highly dynamic destination sequenced destination vector routing for mobile computers.

The Okanou et al. (US#5,862,345) is cited to show the system for location multicasting and database management for mobile sessions in any computer subnetworks without using a home router of a home subnetwork.

The Cansever (US#6,678,252) is cited to show the method and apparatus for dynamic source routing in ad hoc wireless networks.

The Redi (US#6,512,935) is cited to show the energy conserving network protocol.

The Love et al. (US#6,058,107) is cited to show the method for updating forward power control in a communication system.

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (703)305-1029. The examiner can normally be reached on Mon - Fri from 6:30 to 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (703) 308-6602. The fax phone number for the organization where this application or proceeding is assigned is (703)305-3988.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

14. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

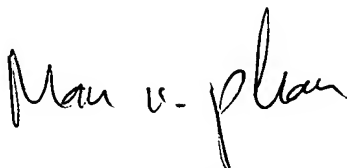
or faxed to: (703) 305-9051, (for formal communications intended for entry)

Or: (703) 305-3988 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Mphan

05/25/2004.



MAN PHAN
PATENT EXAMINER